In this Unit:

**Animals and How They Communicate**

**Module:** Animals Parents and their Offspring
- Lesson 1: Animal Structures
- Lesson 2: Functions of Animal Structures
- Lesson 3: Animals and their Parents
- Lesson 4: Animal Behaviors

**Module:** Communication
- Lesson 1: Animal Communication
- Lesson 2: Sound

**Unit 3:** Light and Shadows
**Module:** See Objects

**Unit 4:** Sky Patterns
**Module:** Observe the Sky

Explore Our Phenomenal World

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Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

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Correlations by Module to the NGSS

MODULE: Animal Parents and Their Offspring

<table>
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<tr>
<th>K-2-ETS</th>
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<td>K-2-ETS1-1</td>
<td>Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</td>
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SEP Science and Engineering Practices

Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s).
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

27, 69–70

Inquiry activities are in italics.
Disciplinary Core Ideas

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering.
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

1-LS1 From Molecules to Organisms: Structures and Processes

1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*

[Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]

Science and Engineering Practices

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)

Disciplinary Core Ideas

LS1.A: Structure and Function

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)

LS1.D: Information Processing

- Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)
### 1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

**Clarification Statement:** Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).

**Connections to Nature of Science**

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world. (1-LS1-2)

**Connections to Engineering, Technology, and Applications of Science**

Influence of Science, Engineering and Technology on Society and the Natural World.

- Every human-made product is designed by applying some knowledge of the natural world and is build using materials derived from the natural world. (1-LS1-1)
<table>
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<th>1-LS3</th>
<th>Heredity: Inheritance and Variation of Traits</th>
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<tr>
<td>1-LS3-1</td>
<td>Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]</td>
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**SEP Science and Engineering Practices**

**Constructing Explanations and Designing Solutions**
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)

**DCI Disciplinary Core Ideas**

**LS3.A: Inheritance of Traits**
- Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. (1-LS3-1)

**LS3.B: Variation of Traits**
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)

**CCC Crosscutting Concepts**

**Patterns**
- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. (1-LS3-1)

**ELD Connections**

- ELD.PII.1.1 27, 28
- ELD.PII.1.5 63
- ELD.PII.1.6 18, 40, 48, 56

*Inquiry activities are in italics.*
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**ALSO INTEGRATES:**

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Inquiry activities are in italics.
## MODULE: Communication

### 1-LS1 From Molecules to Organisms: Structures and Processes

| 1-LS1-2 | Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).] | 86–87, 88–89, 90, 91 |

### SEP Science and Engineering Practices

- **Obtaining, Evaluating, and Communicating Information**
  - Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.
  - Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)

### Connections to Nature of Science

- **Scientific Knowledge is Based on Empirical Evidence**
  - Scientists look for patterns and order when making observations about the world. (1-LS1-2)

### DCI Disciplinary Core Ideas

- **LS1.B: Growth and Development of Organisms**
  - Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

### CCC Crosscutting Concepts

- **Patterns**
  - Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)

### 1-PS4 Waves and Their Applications in Technologies for Information Transfer

| 1-PS4-1 | Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.] | 96–99, 108–109, 113–114 |

Inquiry activities are in italics.
Planning and Carrying Out Investigations
Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.
- Plan and conduct investigations collaboratively to produce evidence to answer a question. (1-PS4-1)

Connections to Nature of Science
Scientific Investigations Use a Variety of Methods
- Science investigations begin with a question.
- Scientists use different ways to study the world. (1-PS4-1)

Disciplinary Core Ideas
PS4.A: Wave Properties
- Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)

Crosscutting Concepts
Cause and Effect
- Simple tests can be designed to gather evidence to support or refute student ideas about causes. (1-PS4-1)

1-PS4 Waves and Their Applications in Technologies for Information Transfer
1-PS4-4 Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*
[Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Science and Engineering Practices
Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.
- Use tools and materials provided to design a device that solves a specific problem. (1-PS4-4)

Inquiry activities are in italics.
### Disciplinary Core Ideas

**PS4.C: Information Technologies and Instrumentation**
- People also use a variety of devices to communicate (send and receive information) over long distances. (1-PS4-4)

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### Crosscutting Concepts

**Connections to Engineering, Technology, and Applications of Science**
**Influence of Science, Engineering, and Technology Society and the Natural World**
- People depend on various technologies in their lives; human life would be very different without technology. (1-PS4-4)

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### ELD Connections

- ELD.PII.1.1 85, 99
- ELD.PII.1.5 90
- ELD.PII.1.6 110

### CCSS ELA/Literacy Connections

- RI.1.9 86
- W.1.2 92

### ALSO INTEGRATES:

- 1-LS1-1 106
- ELD.PI.1.12b 80
- ELA RL.1.5 85

*Inquiry activities are in italics.*